



## Pathology and Microbiology & IPID Graduate student publications 2018-2019

(Not including posters or abstracts)

### Abdulelah Alqarzaee:

Jacquet R, LaBauve AE, Akoolo L, Patel S, **Alqarzaee AA**, Lung TW, Poorey K, Stinear TP, Thomas VC, Meagher R, Parker D. Dual gene expression analysis identifies factors associated with *Staphylococcus aureus* virulence in diabetic mice. *Infection and immunity*. 2019 Mar 4:IAI-00163.

### Mohammad Awaji:

**Awaji M**, and Singh RK. Cancer-Associated Fibroblasts' Functional Heterogeneity in Pancreatic Ductal Adenocarcinoma. *Cancers* 11(3):290-304, 2019. DOI:10.3390/cancers11030290.

**Awaji M**, Futakuchi M, Heavican T, Iqbal J, and Singh RK. Cancer-associated fibroblasts contribute to the survival and progression of the aggressive pancreatic tumor via FGF-2 and CXCL8. *Cancer Microenvironment*. 2019 DOI: 10.1007/s12307-019-00223-3. (In press)

**Awaji M**, Saxena S, Wu L, Prajapati DR, Purohit A, Varney M, Kumar S, Batra SK and Singh RK. CXCR2 signaling promotes secretory cancer-associated fibroblasts in pancreatic ductal adenocarcinoma. *Cancer Research*, 2019 (Submitted).

Wu, L., S. Saxena, **M. Awaji**, and R. K. Singh. 2019. Tumor-associated Neutrophils in Cancer: Going Pro. *Cancers*, 2019 (In press).

Wu L, **Awaji M**, Saxena S, Varney ML, Sharma B, and Singh RK. IL17-CXCR2 axis facilitates breast cancer progression by upregulating neutrophil recruitment. *American Journal of Pathology*, 2019 (Under revisions).

### Maggie Bartlett:

Ramírez de Arellano, E.; Sanchez-Lockhart, M.; Perteguer, M.J.; **Bartlett, ML.**; Ortiz, M.; Campioli, P.; Hernández, A.; Gonzalez, J.; Garcia, K.; Ramos, M.; Jiménez-Clavero, M.Á.; Tenorio, A.; Sánchez-Seco, M.P.; González, F.; Echevarría, J.E.; Palacios, G.; Negredo, A. First Evidence of Antibodies Against Lloviu Virus in Schreiber's Bent-Winged Insectivorous Bats Demonstrate a Wide Circulation of the Virus in Spain. *Viruses* 2019, 11, 360.

Mbala P PC, Wiley MR, Makiala-Mandanda S, Aziza A, Di Paola N, Diagne M, Chitty JA, Diop M, Ayouba A, Vidal N, Faye O, Karhemere S, Aruna A, Nsio J, Mulangu F, Mukadi D, Mukadi P, Kombe J, Mulumba A, Duraffour S, Likofata J, Pukuta E, Gonzalez J, **Bartlett ML**, Caviness K, Minogue T, Sozhamannan S, Gross S, Schroth G, Kuhn J, Delaporte E, Sanchez-Lockhart M, Peeters M, Muyembe JJ, Sall AA, Palacios G, Ahuka-Mundeke SA. Genomic characterization of the Ebola virus variant responsible for a disease outbreak near lake Tumba, Democratic Republic of the Congo, May-July 2018 *Lancet Infectious Diseases*. 2019.

Mbala P AA, Di Paola N, Wiley MR, Makialia-Mandanda S, Caviness K, Pratt C, Ladner JT, Kugelman JR, Prieto K, Chitty JA, Larson P, Ayouba A, Vidal N, Karhemere S, Diop M, Diagne M, Faye M, Faye O, Aruna A, Nsio J, Mulangu F, Mukadi D, Mukadi P, Kombe J, Mulumba A, Duraffour S, Likofata J, Pukuta E, Gonzalez J, **Bartlett ML**, Sozhamannan S, Gross S, Schroth G, Kuhn J, Delaporte E, Sanchez-Lockhart M, Sall A, Muyembe JJ, Peeters M, Palacios G, Ahuka-Mundeke, S. Real-time genomic assessment of medical countermeasures during the 2018 Nord-Kivu and Ituri provinces Ebola virus disease outbreak. *Lancet Infectious Diseases*. 2019.

### Elizabeth DelMain:

Sutlief, A. L., Valquier-Flynn, H., Wilson, C., Perez, M., Kleinschmidt, H., Schofield, B. J., **DelMain, E.**, Holmes, A. E., Wentworth, C. D. Live Cell Analysis of Shear Stress on *Pseudomonas aeruginosa* Using an Automated Higher-Throughput Microfluidic System. *J. Vis. Exp.* (143) 2019, e58926, doi:10.3791/58926.

Kavanaugh, J.S., Flack, C.E., Lister, J., Ricker, E.B., Ibberson, C.B., Jenul, C., Moormeier, D., **DelMain, E.**, Bayles, K.W., Horswill, A.R. Identification of extracellular DNA binding proteins in the biofilm matrix. *mBio.* (under revision).

### **Nathan Hatch:**

Nagendra K. Chaturvedi, **Nathan D. Hatch**, Garrett L. Sutton, Matthew Kling, Julie M. Vose & Shantaram S. Joshi (2019) A novel approach to eliminate therapy-resistant mantle cell lymphoma: synergistic effects of Vorinostat with Palbociclib, *Leukemia & Lymphoma*, 60:5, 1214-1223, DOI: [10.1080/10428194.2018.1520986](https://doi.org/10.1080/10428194.2018.1520986)

### **Tayla Heavican:**

Herek, T.A., J.E. Robinson, **T.B. Heavican**, C. Amador, J. Iqbal, and C.E. Cutucache. "Caveolin-1 is Dispensable for Early Lymphoid Development, but Plays a Role in the Maintenance of the Mature Splenic Microenvironment." *BMC Research Notes*. 2018 July 13. V.11.

**Heavican, T.B.\***, A. Bouska\*, J. Yu, W. Lone, B.J. Dave, Q. Gong, W. Zhang, M. Nairismägi, C. Amador, T.C. Greiner, J. Vose, D.D. Weisenburger, C. Lachel, L. Smith, C. Wang, K. Fu, J.M. Stevens, S.T. Lim, C.K. Ong, R.D. Gascoyne, S. Hartmann, M.B. Pedersen, M.A. Laginestra, R. Wilcox, B.T. Teh, N. Yoshida, K. Ohshima, M. Seto, A. Rosenwald, G. Ott, E. Campo, L.M. Rimsza, E.S. Jaffe, R.M. Braziel, F. d'Amore, G. Inghirami, F. Bertoni, L.M. Staudt, T.W. McKeithan, S. Pileri, W.C. Chan, and J. Iqbal. "Genetic Drivers of Oncogenic Pathways in Molecular Subgroups of Peripheral T-Cell Lymphoma." *Blood*. 2019 February 10.

Maura, F., L. Agnelli, D. Leongamornlert, N. Bolli, J. Chan, A. Doderio, C. Carniti, **T.B. Heavican**, A. Pellegrinelli, G. Pruneri, A. Butler, S.G. Bhosle, A. Chiappella, A. Di Rocco, P.L. Zinzani, F. Zaja, R. Piva, G. Inghirami, W. Wang, T. Palomero, J. Iqbal, A. Neri, P.J. Campbell and P. Corradini. "Integration of Transcriptional and Mutational Data Improves the Stratification of Peripheral T-Cell Lymphoma." *American Journal of Hematology*. 2019 March 4.

Awaji, M., M. Futakuchi, **T.B. Heavican**, J. Iqbal, and R.K. Singh. "Cancer-associated fibroblasts contribute to the survival and progression of the aggressive pancreatic tumor via FGF-2 and CXCL8." *Cancer Microenvironment*. 2019. DOI: 10.1007/s12307-019-00223-3.

Jain, N., K. Hartert, S. Tadros, W. Fiskus, O. Havranek, M.C. John Ma, A. Bouska, **T.B. Heavican**, D. Kumar, Q. Deng, D. Moore, C. Pa, C.L. Liu, A. Gentles, E. Hartmann, R. Kridel, K. Smedby, G. Juliusson, R. Rosenquist, R.D. Gascoyne, A. Rosenwald, F. Giancotti, S. Neelapu, J. Westin, J. Vose, M. Lunning, T. Greiner, S. Rodig, J. Iqbal, A. Alizadeh, R. E. Davis, K. Bhalla, and M.R. Green. "Targetable genetic alterations of TCF4 (E2-2) drive immunoglobulin expression in the activated B-cell subtype of diffuse large B-cell lymphoma." *Science Translational Medicine*. 2018 *Under revision*.

Amador, C., T. C. Greiner, **T.B. Heavican**, L. Smith, K.T. Galvis, W. Lone, A. Bouska, F. D'Amore, M. Pedersen, S. Pileri, C. Agostinelli, A. Feldman, A. Rosenwald, G. Ott, A. Mottok, L. De Leval, P. Gaulard, S. Thye Lim, C. Kiat Ong, S. Ondrejka, J. Song, E. Campo, E. Jaffe, L. Staudt, L.M. Rimsza, J. Vose, D.D. Weisenburger, W.C. Chan, and J. Iqbal. "An Immunohistochemistry Algorithm Subclassifies Peripheral T-cell Lymphoma-Not Otherwise Molecular-Subtypes with High Accuracy." *Blood*. 2019. *Under review*.

### **Lisa Jorgenson:**

Olson MG\*, **Jorgenson LM\***, Widner RE, Rucks EA. Proximity labeling of the *Chlamydia trachomatis* inclusion membrane. *Methods in Molecular Biology*. \*Equally contributing first authors. In Press.

Olson MG, Widner RE, **Jorgenson LM**, Lawrence A, Lagundzin D, Woods NT, SP Ouellette, EA Rucks. Proximity Labeling to Map Host-Pathogen Interactions at the Membrane of a Bacteria Containing Vacuole in *Chlamydia trachomatis* Infected Human Cells. *PLoS Pathogens*. Submitted.

**Saraswoti Khadge:**

**S. Khadge**, G. M. Thiele, J. G. Sharp, T. R. McGuire, L. W. Klassen, P. N. Black, C. C. DiRusso, L. Cook, and J. E. Talmadge, “Long-Chain Omega-3 Polyunsaturated Fatty Acids Decrease Mammary Tumor Growth, Multiorgan Metastasis and Enhance Survival,” Submitted to *Clinical and Experimental Metastasis*, July 2018.

**Stephen Luebker:**

**Luebker SA**, Koepsell SA. Diverse Mechanisms of BRAF Inhibitor Resistance in Melanoma Identified in Clinical and Preclinical Studies. *Frontiers in Oncology*. 2019. 9: 268.

**Insha Mushtaq:**

Eric C. Tom<sup>†</sup>, **Insha Mushtaq<sup>†</sup>(co-first author)** Neha Zutshi, Haitao Luan, Sohinee Bhattacharyya, Priyanka Arya, Fany M. Iseka, Bhopal C. Mohapatra, Timothy A. Bielecki, Luke R. Cypher, Benjamin T. Goetz, Simarjeet S. Negi, Aaqib M. Bhat, Matthew D. Storck, Sandeep Rana, Angelika Barnekow, Pankaj K. Singh, Guoguang Ying, Babu Guda, Amarnath Natarajan, Vimla Band, Hamid Band. (\* **Co-first Authors.**). Control of the basal recycling and surface expression of Epidermal Growth Factor Receptor by the Endocytic Recycling Regulator EHD1 and a potential interacting protein RUSC2. *In revision for Journal of Cell Biology*.

**Macy Olson:**

**Olson MG**, Widner RE, Jorgenson LM, Lawrence A, Lagundzin D, Woods NT, SP Ouellette, EA Rucks. Proximity Labeling to Map Host-Pathogen Interactions at the Membrane of a Bacteria Containing Vacuole in *Chlamydia trachomatis* Infected Human Cells. *PLoS Pathogens*. (Submitted)

**Olson MG\***, Jorgenson LM\*, Widner RE, Rucks EA. Proximity Labeling of the *Chlamydia trachomatis* Inclusion Membrane. *Methods in Molecular Biology*. \*Equally contributing first authors. (In Press)

**Olson MG**, Goldammer M, Gaudiard E, Ladant D, Ouellette SP. A Bacterial Adenylate Cyclase-Based Two-Hybrid System Compatible with Gateway® Cloning. Chapter 6 Two-Hybrid Systems. *Methods in Molecular Biology*. Springer. 2018;1794:75-96. PMID: 29855952 DOI: 10.1007/978-1-4939-7871-7\_6

**Omalla Allan Olwenyi:**

Giorgio Zenere, **Omalla Allan Olwenyi**, Siddappa N. Byrareddy and Stephen E. Braun. Optimizing intracellular signaling domains for CAR NK cells in HIV immunotherapy: a comprehensive review. *Drug Discovery Today*, 24 (4) April 2019. P. 983-991, ISSN 1359-6446, <https://doi.org/10.1016/j.drudis.2019.02.002>.

**Seth Stauffer:**

**Stauffer, S.**, Zeng, Y., Santos, M., Zhou, J., Chen, Y., Dong, J. Cyclin-dependent kinase 1-mediated AMPK phosphorylation regulates mitotic progression and links to antitubulin cytotoxicity. *J Cell Sci*. Submitted.

Zhou, J., Zeng, Y., Cui, L., Chen, X., **Stauffer, S.**, Wang, Z., Yu, F., Lele, S. M., Talmon, G. A., Black, A. R., et al. (2018). Zyxin promotes colon cancer tumorigenesis in a mitotic phosphorylation-dependent manner and through CDK8-mediated YAP activation. *Proc Natl Acad Sci U S A* 115, E6760-E6769.

### **Tian Tian:**

**Tian, Tian**, Chengfeng Bi, Ashley L. Hein, Xuan Zhang, Cheng Wang, Songfei Shen, Ji Yuan et al. "Rac1 is a novel therapeutic target in mantle cell lymphoma." *Blood cancer journal* 8, no. 2 (2018): 17.

Jiang, C. , Bi, C. , Jiang, X. , **Tian, T.** , Huang, X. , Wang, C. , Fernandez, M. R., Iqbal, J. , Chan, W. C., McKeithan, T. W., Lewis, R. E. and Fu, K. (2018), The miR-17~92 cluster activates mTORC1 in mantle cell lymphoma by targeting multiple regulators in the STK11/AMPK/TSC/mTOR pathway. *Br J Haematol.*2018 Sep 10.

### **Kelsey Yamada:**

**Yamada, K.J.**, Heim, C.E., Aldrich, A.L., Gries, C.M., Staudacher, A.G., Kielian, T. Arginase-1 Expression in Myeloid Cells Regulates *Staphylococcus aureus* Planktonic but Not Biofilm Infection. *Infect Immun.* 86:e206-218, 2018 Jun 21;86(7). PMID: 29661929

**Yamada, K.J.**, Kielian, T. Biofilm-Leukocyte Cross-Talk: Impact on Immune Polarization and Immunometabolism. *J. Innate Immun.*, 2019;11(3):280-288. PMID: 30347401.

Zhou, C., Bhinderwala, F., Lehman, M.K., Thomas, V.C., Chaudhari, S.S., **Yamada, K.J.**, Powers, R., Kielian, T., Fey, P.D. Urease is an essential component of the acid response network of *Staphylococcus aureus* and is required for a persistent murine kidney infection. *PLoS Pathog.*, 2018. PMID: 30608981

**Yamada, K.J.**, Xi, X., Attri, K.S., Zhang, W., Singh, P.K., Bronich, T.K., Kielian, T. Nanoparticle targeting of monocyte metabolism to treat *Staphylococcus aureus* prosthetic joint infection. (In revision at *Journal of immunology*).

Lehman, M.K., Nuxoll, A.S., **Yamada, K.J.**, Kielian, T., Carson, S.D., Fey, P.D. Protease-mediated growth of *Staphylococcus aureus* on host proteins is opp3-dependent. (In submission to *mBio*).

### **Jiayu Yu:**

Heavican TB<sup>1</sup>, Bouska A<sup>1</sup>, **Yu J**<sup>1</sup>, Lone W<sup>1</sup>, Amador C<sup>1</sup>, Gong Q<sup>2</sup>, Zhang W<sup>1</sup>, Li Y<sup>2</sup>, Dave BJ<sup>1,3</sup>, Nairismägi ML<sup>4</sup>, Greiner TC<sup>1</sup>, Vose J<sup>5</sup>, Weisenburger DD<sup>2</sup>, Lachel C<sup>5</sup>, Wang C<sup>1,2</sup>, Fu K<sup>1</sup>, Stevens JM<sup>3</sup>, Lim ST<sup>4</sup>, Ong CK<sup>4</sup>, Gascoyne RD<sup>6</sup>, Missiaglia E<sup>7</sup>, Lemonnier F<sup>8</sup>, Haioun C<sup>8</sup>, Hartmann S<sup>9</sup>, Pedersen MB<sup>10</sup>, Laginestra MA<sup>11</sup>, Wilcox RA<sup>12</sup>, Teh BT<sup>4</sup>, Yoshida N<sup>13</sup>, Ohshima K<sup>13</sup>, Seto M<sup>13</sup>, Rosenwald A<sup>14</sup>, Ott G<sup>15</sup>, Campo E<sup>16</sup>, Rimsza LM<sup>17</sup>, Jaffe ES<sup>18</sup>, Braziel RM<sup>19</sup>, d'Amore F<sup>10</sup>, Inghirami G<sup>20</sup>, Bertoni F<sup>21</sup>, de Leval L<sup>7</sup>, Gaulard P<sup>8</sup>, Staudt LM<sup>22</sup>, McKeithan TW<sup>2</sup>, Pileri S<sup>11</sup>, Chan WC<sup>2</sup>, Iqbal J<sup>1</sup>. Genetic drivers of oncogenic pathways in molecular subgroups of peripheral T-cell lymphoma. *Blood.* 2019;133(15):1664-1676.

Liu YY<sup>1</sup>, Zhang JY<sup>2</sup>, Zhang PP<sup>3</sup>, Zhou W<sup>4</sup>, **Yu J**<sup>5</sup>, Yao ZH<sup>6</sup>, Chu J<sup>4</sup>, Yao SN<sup>6</sup>, Wang C<sup>7</sup>, Lone W<sup>5</sup>, Xia Q<sup>8</sup>, Ma J<sup>8</sup>, Yang SJ<sup>6</sup>, Liu K<sup>9</sup>, Dong Z<sup>10</sup>, Chan WC<sup>11</sup>, Guo Y<sup>12</sup>, Smith LM<sup>13</sup>, McKeithan TW<sup>14</sup>, Iqbal J<sup>15</sup> L-type Cav 1.2 Calcium Channel- $\alpha$ -1C regulates response to rituximab in Diffuse Large B-cell Lymphoma. *Clin Cancer Res.* 2019.

Bouska A<sup>1</sup>, Bi C<sup>1</sup>, Lone W<sup>1</sup>, Zhang W<sup>1</sup>, Kedwani A<sup>1</sup>, Heavican T<sup>1</sup>, Lachel CM<sup>2</sup>, **Yu J**<sup>1</sup>, Ferro R<sup>2</sup>, Eldorhamy N<sup>1</sup>, Greiner TC<sup>1</sup>, Vose J<sup>2</sup>, Weisenburger DD<sup>3</sup>, Gascoyne RD<sup>4</sup>, Rosenwald A<sup>5</sup>, Ott G<sup>6</sup>, Campo E<sup>7</sup>, Rimsza LM<sup>8</sup>, Jaffe ES<sup>9</sup>, Braziel RM<sup>10</sup>, Siebert R<sup>11</sup>, Miles RR<sup>12</sup>, Dave S<sup>13</sup>, Reddy A<sup>13</sup>, Delabie J<sup>14</sup>, Staudt LM<sup>15</sup>, Song JY<sup>3</sup>, McKeithan TW<sup>3</sup>, Fu K<sup>1</sup>, Green M<sup>16,17</sup>, Chan WC<sup>3</sup>, Iqbal J<sup>1</sup>. Genetic drivers of oncogenic pathways in molecular subgroups of peripheral T-cell lymphoma. *Blood.* 2019;133(15):1664-1676.

### **Cheng Wang:**

Jiang, Chunsun, Chengfeng Bi, Xiaoxing Jiang, Tian Tian, Xin Huang, **Cheng Wang**, Mario R. Fernandez et al. "The miR-17~ 92 cluster activates mTORC1 in mantle cell lymphoma by targeting multiple regulators in the STK11/AMPK/TSC/mTOR pathway." *British journal of haematology* (2018).

Ren, Yuan, Chengfeng Bi, Xiaohong Zhao, Tint Lwin, **Cheng Wang**, Ji Yuan, Ariosto S. Silva et al. "PLK1 stabilizes a MYC-dependent kinase network in aggressive B cell lymphomas." *The Journal of clinical investigation* (2018).

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**Nicholas Wood:**

**Wood NA**, Chung KY, Blocker AM, Rodrigues de Almeida NA, Conda-Sheridan M, Fisher DJ, Ouellette SP. "Initial Characterization of the Two ClpP Paralogs of *Chlamydia trachomatis* Suggests Unique Functionality for Each". *Journal of Bacteriology*. Accepted 24 October 2018.

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**Lingyun Wu:**

**Wu L**, Saxena S, Awaji M, Singh RK. Tumor-Associated Neutrophils in Cancer: Going Pro. *Cancers* 2019, 11, 564.

**Yongji Zeng:**

Zhou J, **Zeng Y**, Cui L, Chen X, Stauffer S, Wang Z, Yu F, Lele SM, Talmon GA, Black AR, Chen Y, Dong J. Zyxin promotes colon cancer tumorigenesis in a mitotic phosphorylation-dependent manner and through CDK8-mediated YAP activation. *Proc Natl Acad Sci U S A*. 115(29):E6760-E6769.2018. PMID: 29967145

**Xuan Zhang:**

**Xuan Zhang**, Chengfeng Bi, Ting Lu, Weiwei Zhang, Ting Yue, Cheng Wang, Tian Tian, Xiaoyan Zhang, Matthew Lunning, Lauren E. Brown, Jerry Pelletier, William G. Devine, Julie Vose, John A. Porco, Jr., and Kai Fu. Targeting oncoprotein synthesis by a synthetic rocaglate is a promising approach for treating MYCdriven lymphoma. (submitted)

**Chunyi Zhou:**

**Zhou C**, Bhinderwala F, Lehman MK, Thomas VC, Chaudhari SS, Yamada KJ, Foster KW, Powers R, Kielian T, Fey PD. 2019. Urease is an essential component of the acid response network of *Staphylococcus aureus* and is required for a persistent murine kidney infection. *PLOS Pathogens* 15:e1007538.

Hoang T-M, **Zhou C**, Lindgren JK, Galac MR, Corey B, Endres JE, Olson ME, Fey PD. 2019. Transcriptional regulation of *icaADBC* by both IcaR and TcaR in *Staphylococcus epidermidis*. *Journal of Bacteriology* doi:10.1128/JB.00524-18:JB.00524-18.

**Jiuli Zhou:**

**Zhou, J.**, L. Zhang, W. Zhou, Y. Chen, Y. Cheng, and J. Dong, LIMD1 phosphorylation in mitosis is required for mitotic progression and its tumor-suppressing activity. *FEBS J*, 2019. 286(5): p. 963-974.

Wang, Z., X. Chen, M.Z. Zhong, S. Yang, **J. Zhou**, D.L. Klinkebiel, A.R. Karpf, Y. Chen, and J. Dong, Cyclin-dependent kinase 1-mediated phosphorylation of YES links mitotic arrest and apoptosis during antitubulin chemotherapy. *Cell Signal*, 2018. 52: p. 137-146.

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